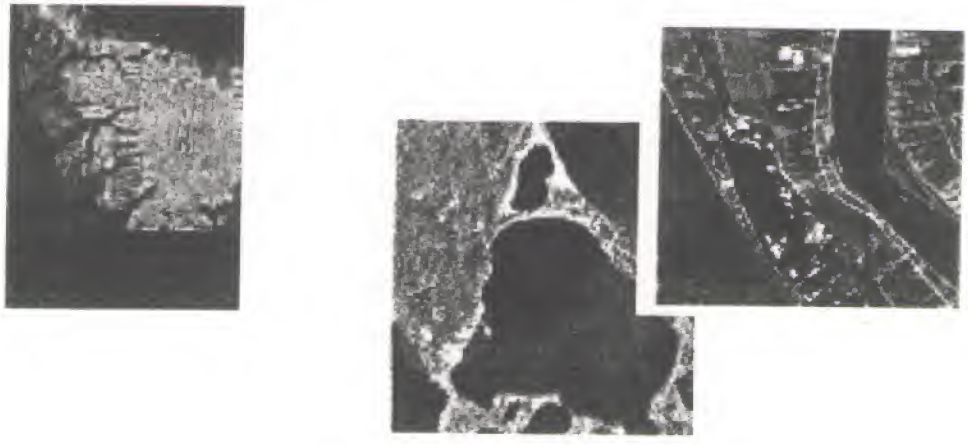
NASA Office of Technology Transfer

John C. Stennis Space Center

Successful Technology Commercialization

Mississippi Company Using NASA Software to Provide Imaging Service



The Spectrum Chlorophyll Meter has evolved from a NASA prototype, right, to a commercial device available in Spectrum's 2001 Spring Product Catalog.

DATASTAR, Inc., of Picayune, Miss., has taken NASA's award-winning Earth Resources Laboratory Applications (ELAS) software program and evolved it to the point that the company is now providing a unique, spatial imagery service over the Internet. ELAS was developed in the early '80s to process satellite and airborne sensor imagery data of the Earth's surface into readable and usable information. While there are several software packages on the market that allow the manipulation of spatial data into usable products, this is usually a laborious task. The new program, called the DATASTAR Image Processing Exploitation, or DIPX, Delivery Service, is a subscription service available over the Internet that takes the work out of the equation and provides normalized geo-spatial data in the form of decision products.

DPIX Delivery Service

End users interested in spatial data, such as soil content, rainfall levels, and other variances of topographical information, but who do not have the time or expertise to eloquently manipulate the data, will appreciate the convenience of DIPX. An evolution of NASA's award winning Earth Resources Laboratory Applications Software package, or ELAS, the DIPX system operates on a highly secure server using protected intellectual property.

HOT Points

- **Easily accessible via internet**
- **User friendly**
- **Secure server**
- **Usable on most operating systems**
- **Compatible with GIS software**
- **Reduces effort and labor**
- **Provides final decision products**

Currently, web customers open a subscription with DATASTAR for specific data points, then log on from their personal computers and manipulate the data to extract several layers of information. DIPX can separate and provide specifics of imagery data, such as data classifications, false color composites, soils, corridor analysis, sub-surface vegetation, data enrichment, mosaicing, and geographical information systems (GIS). The system is structured to work on an international level, allowing hundreds of users to access it simultaneously

DATASTAR is also enhancing the systems mapping capabilities and colorizing data to give it depth. Furthermore, the data provided by DIPX is compatible with all of the GIS software packages on the market, including ArcView and ENVI, and ERDAS/Imagine.

The DIPX Delivery Service offers a certain amount of analytical capability by providing already-normalized geo-rectified data. Users of spatial imagery no longer have to search for the individual LANDSAT or other needed data, spend hours and hard drive space digesting it onto their systems, additional time analyzing it to extract the needed information, or down time waiting on the requested data to be delivered. The images or maps that are created through DIPX are dynamically generated based on the layers and combinations of data chosen. Users simply click a button to add or subtract a layer of information and create a completely usable information or decision product.

By normalizing the data at the ingestion phase, DATASTAR ensures the content remains pristine and provides a consistent result. Users can be sure that, as long as the original data does not contain anomalies, the data extracted from DIPX is exact.

DIPX is essentially a unique system that accesses a georectified spatial database. Most of the content is cadastral data, varying from local, regional and national levels. The goal is to be able to provide decision products on a global scale. Currently, if the data a customer is requesting is not publicly available, DATASTAR can have it collected for a fee. The user has the needed information, and DIPX becomes a more robust system. The database is not bound by file size, only by the information available.

What makes DIPX unique is how it incorporates ELAS into a format usable on most of today's popular systems, from PC's to larger UNIX and LINUX servers. The company also added interface ability to standard file structure and sequel database structure for control.

ELAS, at its best, was only able to read data from a spatial size of about 80 meters, which was state-of-the-art at the software's height of popularity in the 1980s. The original developers had the foresight to build the program modularly so certain capabilities could be added and expanded as the remote sensing industry grew. DATASTAR has leveraged the original ELAS design to be able to address today's local and regional database requirements. DIPX also has the ability to read all of today's high-resolution imagery, including state-of-the-art, 1-meter data.

Jim Ramsay, project engineer DATASTAR, Inc., believes that because ELAS was not highly intuitive, placing it in the smaller, faster environment of DIPX will increase the variety of applications and number of end users. Obvious users of DIPX include farmers, city planners, real estate agents, site surveyors, and archaeologists. But Ramsay said that basically anyone or any group with an interest in spatial data of a given area could benefit from using DIPX.

Ramsay does not expect a system like DIPX to be a daily tool for every farmer and city planner in America – yet. "Since last March, we have leveraged this product with amazing success. And we're still improving and expanding," Ramsay said. "I think it will be an industrial strength tool for doing tremendous projects in 2002. Its evolution into a PC environment certainly opens up the possibilities."

The NASA Commercial Technology Program at Stennis Space Center made ELAS available to DataStar in 1992 under the Freedom of Information Act. "This is a text-book example of how NASA hopes businesses will use and expand upon those technologies designed for government use," said Kirk Sharp, manager of NASA's Office of Technology Transfer at Stennis. "Tax-payers dollars went into the original development of ELAS, and it only makes sense that the tax-payers are the ones to reap the benefits of the program. I think DIPX will continue the legacy of ELAS."

Points of Contact

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MISSISSIPPI COMPANY USING NASA SOFTWARE PROGRAM TO PROVIDE UNIQUE IMAGING SERVICE

HANCOCK COUNTY, Miss. – Someone once said that success is not a destination, it's a journey. The DATASTAR Image Processing Exploitation (DIPX) program is taking a 20-year-old NASA software program down roads less traveled, and in return is providing a unique end-user service.

DIPX is an evolution of NASA's award-winning Earth Resources Laboratory Applications Software package, or ELAS, developed at Stennis Space Center. Since the early 1980s, ELAS has been used worldwide for processing satellite and airborne sensor imagery data of the Earth's surface into readable and usable information. While there are several software packages on the market that allow the manipulation of spatial data into usable products, this is usually a laborious task. The DIPX Delivery Service, a subscription service available over the Internet, takes the work out of the equation and provides normalized geo-spatial data in the form of decision products.

DIPX was created by DATASTAR, Inc., a woman-owned computer company in Picayune, Miss. End users interested in spatial data, such as soil content, rainfall levels, and other variances of topographical information, but who do not have the time or expertise to eloquently manipulate the data, will appreciate the convenience of DIPX.

Upon opening an account, users can either request a deliverable product from DATASTAR, or access the data sets via their home computers. DATASTAR has provided the system on a secure server to protect its intellectual property and the personal data of its subscribers.

Currently, web customers open a subscription with DATASTAR for specific data points, then log on from their personal computers and manipulate the data to extract several layers of information. DIPX can separate and provide specifics of imagery data, such as data classifications, false color composites, soils, corridor analysis, sub-surface vegetation, data enrichment, mosaicing, and geographical information systems (GIS). The system is structured to work on an international level, allowing hundreds of users to access it simultaneously.

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requested data to be delivered. The images or maps that are created through DIPX are dynamically generated based on the layers and combinations of data chosen. Users simply click a button to add or subtract a layer of information and create a completely usable information product or decision product.

By normalizing the data at the ingestion phase, DATASTAR ensures the content remains pristine and provides a consistent result. Users can be sure that, as long as the original data does not contain anomalies, the data extracted from DIPX is exact.

DIPX is essentially a unique system that accesses a georectified spatial database. Most of the content is cadastral data, varying from local, regional and national levels. The goal is to be able to provide decision products on a global scale. Currently, if the data a customer is requesting is not publicly available, DATASTAR can have it collected for a fee. The user has the needed information, and DIPX becomes a more robust system.

The database is not bound by file size, only by the information available. "The information, or layers, is publicly available," said Jim Ramsay, project manager for DATASTAR. "It's the way it is housed and our ability to reach out and touch a portion of it that's proprietary."

What makes DIPX unique is how it incorporates ELAS into a format usable on most of today's popular systems, from PC's to larger UNIX and LINUX servers. The company also added interface ability to standard file structure and sequel database structure for control. The dimensionality of DIPX internals assures that the software is current with leading-edge hardware offerings in the computer industry. DIPX expands the original program's parameters, and makes a previously difficult software program simple to use.

ELAS, at its best, was only able to read data from a spatial size of about 80 meters, which was state-of-the-art at the software's height of popularity in the 1980s. The original developers had the foresight to build the program modularly so certain capabilities could be added and expanded as the remote sensing industry grew. And giant leaps in the quality of satellite data has demanded that processors also improve. DATASTAR has leveraged the original ELAS design to be able to address today's local and regional database requirements. DIPX also has the ability to read all of today's high-resolution imagery, including state-of-the-art, 1-meter data.

Ramsay believes that because ELAS is not highly intuitive, placing it in a smaller, faster environment of DIPX will increase the variety of applications and number of end users. Obvious users of DIPX include farmers, city planners, real estate agents, site surveyors, and archaeologists. But Ramsay said that basically anyone or any group with an interest in spatial data of a given area can benefit from using DIPX.

Currently, one of the largest applications of DIPX data is in prescription farming. By offering these services over the Internet, Ramsay sees DIPX as a tremendous resource for crop consultants. A crop consultant works with farmers on a subscription basis to provide information to maintain the health and yield of crops and land. As a subscriber of DIPX, a crop consultant can access DIPX with specific input parameters and create an information product about a tract of land. The consultant would then be able to make recommendations to the farmer, such as adding specific nutrients to the soil, irrigating, conducting pest control, etc.

"By providing this data, a crop consultation would be similar to a doctor, who knows the needs of his patient," Ramsay said. "The crop consultant will have access to a variety of up-to-date information about that area of land, allowing him to produce a prescription for the crop."

Ramsay does not expect a system like DIPX to be a daily tool for every farmer and city planner in America – yet. "Since last March, we have leveraged this product with amazing success. And we're still improving and expanding," Ramsay said. "I think it will be an industrial strength tool for doing tremendous projects in 2002. Its evolution into a PC environment certainly opens up the possibilities."

ELAS was made available to DATASTAR in 1992 by the NASA Commercial Technology Program at Stennis Space Center through the Freedom of Information Act. Under this act all federally developed technologies that are not protected by patent can be transferred to U.S. companies.

"This is a text-book example of how NASA hopes businesses will use and expand upon those technologies designed for government use," said Kirk Sharp, manager of NASA's Office of Technology Transfer at Stennis. "Tax-payers dollars went into the original development of ELAS, and it only makes sense that the taxpayers are the ones to reap the benefits of the program. I think DIPX will continue the legacy of ELAS."

For more information on DIPX, contact DATASTAR, Inc., at (601) 799-2439, or e-mail them at sales@datastar.net.

For more information on the NASA Commercial Technology Program at Stennis Space Center, call (228) 688-1929, or visit the web site at http://technology.ssc.nasa.gov.

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REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1. REPORT DATE *(DD-MM-YYYY)*	2. REPORT TYPE	3. DATES COVERED *(From - To)*
20-09-2001		

4. TITLE AND SUBTITLE
Mississippi Company Using NASA Software Program to Provide Unique Imaging Service

DATASTAR Success Story

5a. CONTRACT NUMBER

5b. GRANT NUMBER

5c. PROGRAM ELEMENT NUMBER

6. AUTHOR(S)
Technology Development and Transfer Office

5d. PROJECT NUMBER

5e. TASK NUMBER

5f. WORK UNIT NUMBER

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)
Technology Development and Transfer Office

8. PERFORMING ORGANIZATION REPORT NUMBER
SE-2001-09-00052-SSC

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)

10. SPONSORING/MONITOR'S ACRONYM(S)

11. SPONSORING/MONITORING REPORT NUMBER

12. DISTRIBUTION/AVAILABILITY STATEMENT
Publicly Available STI per form 1676

13. SUPPLEMENTARY NOTES
Periodical

14. ABSTRACT

15. SUBJECT TERMS

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19b. NAME OF RESPONSIBLE PERSON
a. REPORT	b. ABSTRACT	c. THIS PAGE			Technology Development and Transfer Office
U		U	UU	5	19b. TELEPHONE NUMBER *(Include area code)* (228) 688-1929